

REPLACED BY  
ART 34 AMDT

## New Claims

10/530071

1. Pumping apparatus (1) with a peristaltic drive device (3) for pumping a medium through a line (4) having at least one compressible portion, containing a one-piece shaft (10) with cams arranged so as to be offset with respect to one another and with attached lamellae (14), positive guidance for the lamellae (14) being provided, characterized in that the cams are cam segments (13), the shaft (10) is essentially without a core shaft and essentially without a continuous core region, and the ratio between the lamella height (c) and lamella stroke (h) is about 4:1 or less.
15. 2. Pumping apparatus (1) according to Claim 1, characterized in that the shaft (10) has a thin continuous core region (22), in particular a continuous core region (22) with a diameter of below 3 mm.
20. 3. Pumping apparatus (1) according to one of the preceding claims, characterized in that a counterpressure plate (18) for applying the line, in particular a hose (4), and for supporting the pressure exerted on the line or the hose (4) by the lamellae (14).
25. 4. Pumping apparatus (1) according to Claim 3, characterized in that the counterpressure plate (18) is sprung within a housing of the pumping apparatus (1) by means of one or more springs (19, 23, 26), in particular by means of barrel springs (23), leaf springs (26) or another type of spring.
30. 5. Shaft (10) for a pumping apparatus (1) with a peristaltic drive device (3), in particular according to one of the preceding claims, the shaft being formed in one piece, characterized in

that the shaft (10) is designed without a core shaft and essentially without a continuous core region or, for an increase in stability, with the thin continuous core region with a diameter of below 3 mm and having cam segments (13) offset with respect to one another and contiguous to one another.

- 5        6. Shaft (10) according to Claim 5, characterized in that an odd or even number of cam segments (13) is provided.
- 10        7. Shaft (10) according to Claim 5 to 6, characterized in that the cam segments (13) are offset with respect to one another in such a way that only one cam segment is at a maximum distance from an imaginary center line (21) of the shaft (10).
- 15        20      8. Shaft (10) according to Claim 7, characterized in that a uniform offset ( $\alpha$ ) of the cam segments (13) is provided, in particular an offset of  $40^\circ$  in the case of nine cam segments (13).
- 25        30      9. Shaft (10) according to one of Claims 5 to 8, characterized in that the shaft (10) consists of a plastic, in particular of a carbon fibre plastic, of a glass-fibre-reinforced polymer or of another stable and dimensionally consistent material.
- 35        30      10. Lamella (14) for a pumping apparatus (1) according to one of the preceding claims, with a passage orifice (15), characterized in that the passage orifice (15) corresponds in longitudinal direction essentially to the outside diameter of a cam segment (13) of a shaft (10), to which the lamella (14) can be or is attached moveably, and in the transverse direction essentially to the outside

**REPLACED BY  
ART 34 AMDT**

- 28 -

diameter (d) circumscribed by the rotating cam segments (13).

11. Lamella (14) according to Claim 10, characterized in that the passage orifice (15) is essentially a long hole with a greater extent transversely to the longitudinal direction of the lamella (14).
12. Use of the pumping apparatus (1) according to one of Claims 1 to 4 as an infusion pump or transfusion pump for dialysis or as a hose pump for other medical purposes.